

1.8 Word Problems--> Day 2

1. A gum ball machine contains only quarters and dimes. There are 28 coins whose total value is \$5.35. How many quarters are there?



Let q be # quarter
Let d be # dimes

① $q + d = 28$
② $0.25q + 0.1d = 5.35$

① $q = 28 - d$
Sub into ②
 $0.25(28 - d) + 0.1d = 5.35$
 $7 - 0.25d + 0.1d = 5.35$
 $-0.15d = -1.65$
 $d = 11$

Sub into ①
 $q + 11 = 28$
 $q = 17$

∴ There are 17 quarters



2. Moira invested \$800. Part of the money was in a term deposit that paid 6% per annum, the rest was in an account earning 4% per annum. After one year she had earned \$42 interest. How much did she invest at each rate?

per year Let a be amt invested @ 6%
Let b be amt " @ 4%

① $a + b = 800$
② $0.06a + 0.04b = 42$

① $0.06a + 0.06b = 48$
② $0.06a + 0.04b = 42$

$\frac{0.02b = 6}{b = 300}$

Sub into ①
 $a + 300 = 800$
 $a = 500$

∴ She invested \$500 @ 6% and \$300 @ 4%

3. Sheldon is asked to make 100 mL of 48% alcohol solution to pass his chemistry course! He is given a 40% and 60% alcohol solutions and asked to mix them in order to get the right solution. Help poor Sheldon... How many millilitres of each must he use?



Let a be the amount (mL) of 40% solution

Let b " " " " " 60% solution

$$\textcircled{1} \quad a + b = 100$$

$$\textcircled{2} \quad 0.4a + 0.6b = 100(0.48)$$

$$\textcircled{1} \quad a = 100 - b$$

sub in to $\textcircled{2}$

$$0.4(100 - b) + 0.6b = 48$$

$$40 - 0.4b + 0.6b = 48$$

$$0.2b = 8$$

$$b = 40$$

Sub in $\textcircled{1}$

$$a + 40 = 100$$

$$a = 60$$

\therefore Sheldon needs
60 mL of 40% solⁿ
40 mL of 60% solⁿ

4. How many kg of 30% salt solution by mass and 40% salt solution by mass should be mixed to form 200 kg of 37% salt solution by mass?

Let a be the amt (kg) of 30% salt solⁿ

Let b " " " " " 40% " "



$$\textcircled{1} \quad a + b = 200$$

$$\textcircled{2} \quad 0.3a + 0.4b = 200(0.37)$$

Do at home!!!

ANSWERS

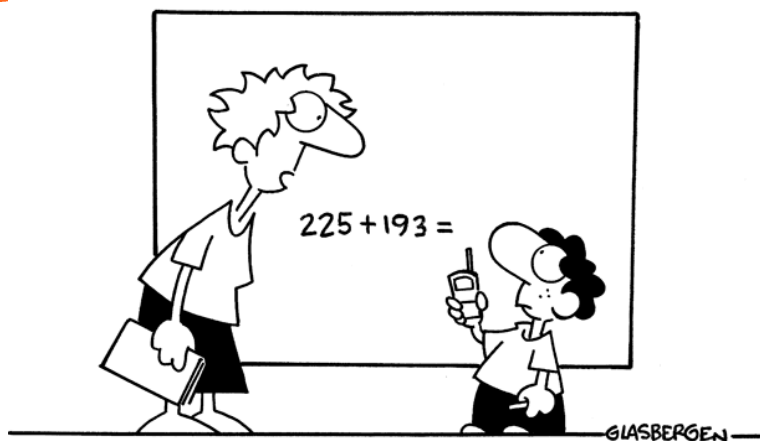
$$a = 60 \text{ kg of } 30\%$$

$$b = 140 \text{ kg of } 40\%$$

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"You have to solve this problem by yourself. You can't call tech support."